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1998 Survey for *Spiranthes diluvialis* (Ute ladies'-tresses orchid) in Southeastern Wyoming

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Spiranthes romanzoffiana being visited by a bumble bee
Photographed along Rock Creek, Converse County on August 6, 1998

Prepared for:

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A 1998 Survey for *Spiranthes diluvialis* (Ute ladies'-tresses orchid) in Southeastern Wyoming

Donald L. Hazlett

Background

The Ute ladies'-tresses orchid (*Spiranthes diluvialis*) was first described as a species in 1984 (Sheviak). From 1984 until 1992 field and herbarium studies determined that this infrequent orchid was known from only 11 populations in three states (Colorado, Utah and Nevada). For this reason the Ute ladies'-tresses orchid was listed as a threatened plant species on January 17, 1992 (57 FR 2053). This listing was under the authority of the Endangered Species Act (1973) as amended by the U.S. Fish and Wildlife Service (1992).

A consequence of listing this plant species as threatened was that much more effort was made by botanists and field biologists to search for additional populations of the Ute ladies'-tresses orchid. Much of the effort to search for this rare orchid in Wyoming has been due to funding by the Bureau of Land Management, Wyoming State Office. Since 1996 two new populations of this orchid in Wyoming and one population in Nebraska were discovered during BLM funded field survey work.

The result of the Wyoming surveys and of field surveys in other western states since 1992 was that 21 additional populations of Ute ladies'-tresses orchid were discovered. These additional populations include eight new locations in Utah, six in Montana, four in Wyoming, three in Idaho, two in Colorado, one in Nebraska and one in Washington. These recently discovered populations increased the number of known locations for this orchid from 11 in 1992 to 32 populations in 1998.

The four known populations of *Spiranthes diluvialis* in Wyoming are along Bear Creek (Goshen County), along Antelope Creek (Converse County) along the Niobrara River near McMasters Reservoir (Niobrara County), and along Sprager Creek (Laramie County). The Bear and Antelope Creek populations were discovered by Burrell E. Nelson, herbarium manager, at the Rocky Mountain Herbarium, University of Wyoming, Laramie, Wyoming. The Niobrara River and Sprager Creek populations were discovered by Hazlett (1996, 1997).

As more locations of this orchid that are discovered (on public and private land) the chances for long-term survival of this species increases. Although none of the known locations for *Spiranthes diluvialis* in Wyoming are on land administered by the Bureau or Land Management or on other federal lands, there are still many riparian areas near known locations of this orchid that have not yet been surveyed. It is important to continue to search likely locations in southeastern Wyoming for this endangered plant species.

Survey Objective

To survey riparian areas in southeastern Wyoming that are potential habitats for the Ute ladies'-tresses orchid (*Spiranthes diluvialis*).

Methods

In July, 1998 I met with Jeff Carroll (botanist at the B.L.M. state office in Cheyenne, Wyoming) to designate on a map the priority areas for this field survey. The timing of the survey is very important, since this orchid can easily be located only when it is in flower. This flowering time is from late July to mid-September. It was agreed that all survey work for this orchid should be done during August. Priority survey areas were the Medicine Bow National Forest, Laramie Peak Unit, and the creeks and rivers that leave this area toward the east. More specifically, the following riparian areas were designated as priority areas for survey work:

- 1) Laramie River and North Laramie River: private and public land.
- 2) La Bonte Creek: public land only
- 3) Elkhorn, Little Beaver, Box Elder and Rock Creek, Laramie Mountains: private and public land.

All three of these priority areas were surveyed during the first week of field work (Aug. 3-7). This included surveys of 4 sections of the North Laramie River 4 sections of the Laramie River, about 6 miles of La Bonte Creek, portions of North Cottonwood Creek, Rabbit Creek, Siebolt Creek, Luman Creek, Dry Laramie River, Wheatland Creek and Shawnee Creek. The exact locations of these as well as areas surveyed during 1995, 1996 and 1997 are all included on the enclosed B.L.M. maps. On these maps the field survey areas are outlined in blue with an indication of the month and year that a survey was done. These maps serve as an updatable record of the field locations that have been surveyed. These maps should be consulted whenever future surveys for *Spiranthes diluvialis* are undertaken.

During the second survey week (Sept. 9-11) the following creeks were also surveyed: Lonetree Creek, Sand Creek, Wind Creek, Bull Gulch, Stinking Water Gulch and portions of Antelope Creek (all in Converse County). In addition, the following creeks near Douglas, Wyoming were also surveyed: Little Bed Tick Creek and Bed Tick Creek. The exact location of the sections of these creeks that were surveyed are also indicated on the enclosed maps

A total of 76 field hours (9.5 days) of field time were spent between August 3-7 and September 9-11 conducting field surveys for *Spiranthes diluvialis*. All field surveys were done on foot and all locations that were surveyed are clearly marked on the enclosed maps. Unless both sides of the creek were easily visible, a creek was not considered to be surveyed unless both sides of it were walked.

Results

During nine days of field survey work no populations of Ute ladies'-tresses orchid (*Spiranthes diluvialis*) were located. A brief description of the main riparian areas that were surveyed follows:

Laramie River and North Laramie River (Albany County)

The surveyed portions of the Laramie River west of Wheatland (see map) consistently had scattered to abundant cottonwood trees (*Populus deltoides*). However, large Russian olive trees (*Elaeagnus angustifolia*) are well established and common along many sections of the river. For example, the many old and fallen cottonwood trees along the Laramie River that occurred on Rietz and Kittel properties had many Russian olive trees in the understory. This meandering river had some locations that were potential habitat for *Spiranthes diluvialis* and two plants that are sometimes associated with *S. diluvialis*, *Triglochin maritimum* (arrowgrass) and white sweet clover (*Melilotus alba*), were seen along this river. On the other hand, the overstory of cottonwood trees appeared to be too dense and the shade too great for "typical" *S. diluvialis* habitat. No orchids were seen.

The surveyed portion of the North Laramie River had the aquatic *Ranunculus aquatilis* and did have sections that were mowed. Canadian thistle (*Cirsium arvense*) was locally common along the surveyed sections of the North Laramie River, but no *Spiranthes diluvialis* plants or associates of this orchid were located.

La Bonte Creek (Albany County)

This public camping and fishing area had mountain meadows, *Pinus flexilis* (limber pine), *Aibes* (fir) and several *Salix* (willow) trees. This area appeared to have too high of elevation (2,000-2,200 ft elevation) for appropriate *S. diluvialis* habitat. Also, there is no floodplain. In the boggy areas of the creek margins there was a bog orchid (*Platanthera sp.*), but none of the recognized associates of *S. diluvialis* were present. Along the access road toward La Bonte Creek sections of Corduroy Creek, Rocky Ford Creek, Jackson Creek and Gould Creek were surveyed. The margins of these creeks were usually grazed and sometimes had good wetland vegetation, but no *Spiranthes diluvialis* plants were located.

Elkhorn, Little Beaver, Box Elder and Rock Creek (Converse County)

These mountain creeks also appeared to be too high of elevation for *Spiranthes diluvialis*. Supporting evidence of this was that a population of *Spiranthes romanzoffiana* Cham. was encountered along Rock Creek (see cover photograph). Cattle were common in this area and no *S. diluvialis* plants were discovered. Nearby sections of the Little Medicine Bow River were also unsuccessfully searched for *Spiranthes diluvialis* (see map for exact location).

North Cottonwood Creek (Albany County)

The riparian area of the Double 4 Ranch (owned by the True family) was searched. Plant species common along this creek were *Alnus* sp. (alder), *Populus* sp. (cottonwood), *Glycyrrhiza lepidota* (wild licorice), *Lysimachia* (loosestrife) and *Helianthus nuttallii* (Nuttall's sunflower). *Ranunculus aquatilis* was very common in the creek, but there were no signs of *Spiranthes diluvialis*. *Cirsium arvense* (Canadian thistle) was often abundant along this creek. The elevation here also appeared too high for the Utes ladies'-tresses orchid. Another creek that was searched without success in this section of the Laramie Mountains was sections of Siebolt Creek (see map for exact location).

Update on 3 *Spiranthes diluvialis* populations in southeastern Wyoming

Niobrara River Population (Niobrara County)

Since the discovery of *Spiranthes diluvialis* along the Niobrara River in 1996 there has been a survey of the Niobrara river in Nebraska for this orchid (Hildebrand, 1997). For these Nebraska populations Hildebrand estimated 1,300 orchids in Grote's Niobrara Meadow and 1,000 individuals in Kiem's Niobrara Meadow. Hildebrand also reported 12 individuals of *Spiranthes diluvialis* population at the McMaster's Reservoir/Niobrara River population in 1997. When I first discovered the McMaster's Reservoir population in 1996 there were only 3 *Spiranthes diluvialis* plants at this location. This population occurs east of the dam, south of the river and well before the fence. On August 19, 1998 this location was revisited and to my surprise there were 160 *Spiranthes diluvialis* plant at the same location were only 3 and 12 occurred in 1996 and 1997, respectively! It was initially thought that the rainfall pattern in 1996 was such that it allowed for the flowering of these few orchids. Now it appears that the rainfall pattern in 1998 was even more favorable for *Spiranthes diluvialis* orchids near McMaster's reservoir.

Sprague Creek Population (Laramie County)

The *Spiranthes diluvialis* population along Sprague Creek in Laramie County was discovered in September, 1997. This was too late in the year for a good count, since many of the orchids were well past flowering and therefore difficult to locate. A total of 71 individuals were counted in 1997. To secure a more accurate tally of the individuals at this site another count was made along Sprague Creek on August 3, 1998. On this date the orchids were in full flower and 397 individuals were counted on the west margin of Sprague Creek and 55 were counted on the east side. The total number of individuals was 452. This makes the Sprague Creek population the largest known population of *Spiranthes diluvialis* in Wyoming.

Bear Creek Population (Goshen County)

Also on August 3, 1998 the number of individuals in the Bear Creek streambank population of *Spiranthes diluvialis* were counted. A total of 214 individuals were tallied in the Bear Creek population. Of this total 145 were on the north side and 69 on the south side of the creek. Jeff Carroll has made annual counts of the number of orchids at the Bear Creek site and

was present during the 1998 field count. Jeff indicated that 214 is the highest tally of orchids yet to be recorded for this population. Hildebrand reported only 20 at this location in 1997. However, there is a meadow population of *Spiranthes diluvialis* along Bear Creek (west of the streambank population) that was reported by Hidebrand (1997) to have 500 individuals. This population was not relocated in 1998.

Summary & Future Work

Although no new populations of *Spiranthes diluvialis* were discovered during this 1998 survey, 1998 did appear to be a good year for the existing populations of Ute ladies'-tresses orchid in southeastern Wyoming. This was an El Niño year, but I stop short of suggesting that El Niño was the reason for such high tallies of this rare orchid. Nonetheless, the highest tally of individual orchids yet recorded were made at the Niobrara River (McMaster's population only), Sprague Creek and Bear Creek locations in 1998. The fourth known population of this orchid in southeastern Wyoming, along Antelope Creek, was not visited in 1998. Previous reports (B. Nelson) indicate that there are less than 50 individuals at the Antelope Creek location .

During the past four years the B.L.M state office in Cheyenne, Wyoming has funded field survey work to search for *Spiranthes diluvialis*. As a result of this funding two new populations of this orchid have been discovered in Wyoming (Sprague Creek and Niobrara River) and the first record of Utes ladies'tresses orchid was discovered in Nebraska (Niobrara River). In 1998 an unsuccessful effort was made to again search for this rare plant. Although further survey work could easily discover new populations, many of the more accessible riparian areas have already been surveyed. If additional field survey work for this rare orchid is to be done in southeastern Wyoming, the surveyor should first contact or visit the B.L.M. office in Cheyenne, Wyoming. The Wyoming B.L.M. office archives the maps that indicate the locations in southeastern Wyoming that were surveyed for *Spiranthes diluvialis* from 1995-1998.

An important benefit of the 1998 survey was that three field persons from the Thunder Basin National Grassland Office in Douglas, Wyoming were trained in how and when to search for this rare orchid. I suggest that additional training of field biologists be done. Training should include a field trip to a known population and should provide information regarding the proper time and methods to search for this orchid. Additional surveys in conjunction with a training program may be the best means to continue the search for additional populations of this rare orchid, at least in southeastern Wyoming. If more training were done, field botanists could make notes during the summer of potential habitat areas and could make an effort to return to these locations in late summer to search for *Spiranthes diluvialis*.

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